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THE EFFECT OF ANTITRUST POLICY ON CONSUMER WELFARE:

ASSEMBLING THE EMPIRICAL EVIDENCE

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Introduction

Should the United States pursue a vigorous antitrust policy? Economists' answer to this question has changed sharply over time, with revisions almost always following new theoretical arguments rather than empirical assessments of antitrust policy's actual effects on consumer welfare.

American and British economists greeted the passage of the Sherman Antitrust Act of 1890 with little enthusiasm, if not outright hostility (Stigler (1982)). Not until the Depression did economists, notably Henry Simons, Jacob Viner, and Frank Knight of the University of Chicago, argue that antitrust enforcement was needed to stimulate competition in American industry (Kovacic (1989)). Antitrust activism enjoyed a steady rise in popularity in the 1950s and 1960s, as economists such as Joe Bain (1951, 1956) focused professional attention on barriers to entry and the relationship between industry concentration and profitability.

Federal support for an activist antitrust policy crystallized with the formation in December 1967 of a White House Task Force, chaired by Phil C. Neal, to look into the issue. Economists, however, thought the task force's report went too far by proposing that "stable" oligopolistic industries be restructured and that mergers between "large firms" and "leading firms" be prohibited.[1]

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[1] See *White House Task Force Report on Antitrust Policy* (Phil C. Neal, Chairman), Bureau of National Affairs, Washington, D.C., released May 21, 1969. An oligopolistic industry was defined as one in which four or fewer firms possess an aggregate market share in excess of 70 percent and similarly high levels of concentration have persisted for at least a decade. It was proposed that such industries be reformed to reduce the market share of each firm to 12 percent or less within four years. Large firms that were prohibited from merging were defined as having sales in excess of $500 million, while leading firms were defined as having market shares exceeding 10 percent in an industry with four-firm concentration exceeding 50 percent. Task force members Robert Bork and Paul MacAvoy included separate statements that were critical of proposals in the Neal Report.

Skepticism about the benefits of antitrust enforcement intensified during the 1970s as a new generation of University of Chicago economists pointed out how competitive forces could erode market power and offered empirical evidence that any market power that did exist primarily reflected a firm's greater efficiencies over its rivals (Brozen (1971)). As synthesized by Bork (1978), the essence of the Chicago view was that antitrust concerns should be raised only when a firm has a dominant share of a market protected by entry barriers.

The Chicago School perspective not only achieved academic prominence, but also gained influence in circuit court and Supreme Court decisions in the mid-1970s (Baker (2002)). This was seen most clearly in horizontal merger analysis, where the presumption that consumers would be harmed by an increase in concentration resulting from an acquisition or merger faded considerably. But the intellectual pendulum began to swing back toward a more favorable view of antitrust intervention in the 1980s as game theorists showed how various anti-competitive strategies such as predation could be successful in reducing competition.

As we enter a new century, the economics profession is not of one mind theoretically on the appropriate scope of antitrust policy. Some economists have accepted network externalities as a potential source of market power that requires more vigilant antitrust enforcement (Katz and Shapiro (1994)). But others have developed arguments suggesting that efforts to achieve the traditional objectives of antitrust—to protect competition and prohibit collusion—can be counterproductive. For example, if the government tries to lower entry barriers in industries with differentiated products, the firms in such industries may segment the market and raise prices (Davis, Murphy, and Topel (2001)). In addition, current laws penalizing collusion may actually promote collusive agreements. McCutcheon (1997) argues that the law strengthens the

commitment to collude because sanctions are too light to discourage collusive behavior, but sufficiently costly to dissuade firms from meeting to punish a firm that cheats.

It would be fair to conclude that economists' views toward antitrust enforcement are aligned with the prevailing state of economic theory on the merits of competition and the extent to which firms' conduct can enhance or weaken competition. To be sure, theory is important, and in a few cases it can unambiguously indicate the effects of a particular antitrust policy (e.g., the Robinson-Patman Act prohibiting price discrimination generally reduces consumer welfare.) But the actual impact of antitrust policies on consumer welfare can only be deduced from empirical evidence. This paper synthesizes the available scholarly evidence regarding the effect of antitrust policy on consumer prices and in deterring anti-competitive behavior.[2]

Although the United States has been enforcing antitrust laws for more than a century, we conclude that too little is known about the effects of those laws to permit sharp policy conclusions. The available evidence suggests that antitrust policy and enforcement has not significantly improved consumer welfare, but more research is clearly needed to resolve the matter. Moreover, given the possibility that antitrust policy is seriously flawed, such research could play a useful role in improving current policy.

The Scope of Antitrust Activity

U.S. antitrust policy is the responsibility of the Department of Justice (DOJ) and the Federal Trade Commission (FTC). DOJ enforces Section 1 of the Sherman Act prohibiting

[2] Our focus is on academic assessments of antitrust policy, not those conducted by federal agencies. We note that in 1999, the Federal Trade Commission published a study that analyzed the outcome of 35 merger cases between fiscal years 1990 and 1994 in which it obtained divestiture orders as a condition for merger approval. Its analysis, however, focused solely on the viability of the divestitures, not on their effects on competition or consumer welfare.

contracts, combinations, and conspiracies in restraint of trade, enforces Section 2 of the Sherman Act prohibiting actions to monopolize or attempt to monopolize markets, and along with the FTC enforces Section 7 of the Clayton Act prohibiting mergers between firms that threaten to substantially reduce competition in any line of commerce.[3] As pointed out by Litan and Shapiro (2002), DOJ and FTC have informally divided merger enforcement by industry, but there is some overlap that is resolved on a case by case basis.[4] The FTC may also initiate cases under Section 5 of the Federal Trade Commission Act for "unfair methods of competition," thereby providing it with the ability to combat abuses that DOJ attacks under Sections 1 and 2 of the Sherman Act.[5]

Data on DOJ and FTC investigations and budgets, publicly available for only the past twenty years, are summarized in table 1. Monopolization cases constitute a small share of antitrust investigations in a given year, but they still absorb a moderate fraction of DOJ's recent budgets. DOJ investigated fewer allegations of price fixing during this period, but still spent at least one-third of its budget on this activity. Merger investigations currently account for the largest share of antitrust activity, with the FTC handling slightly more mergers than DOJ. Until

[3] The Clayton Act also prohibits firms from engaging in tying arrangements and competing firms from having overlapping boards of directors.

[4] The Bush Administration has recently announced an agreement with the DOJ and FTC that would divide responsibilities along well-defined lines. Under the agreement, DOJ will be responsible for reviewing mergers involving internet, software, telecommunications, and entertainment firms, and the FTC will have authority for reviewing mergers involving health-care, energy, computer hardware, automotive, and biotechnology firms.

[5] For example, the FTC initially investigated Microsoft for possible anti-competitive practices. DOJ subsequently brought its Section 2 case after the FTC did not bring a complaint.

recently, the FTC's budget for mergers was equal to the Antitrust Division's budget for all its investigations.[6]

Total resources consumed by antitrust enforcement, however, amount to much more than the combined budgets of DOJ and FTC. Firms must pay for legal advice, particularly in obtaining approvals for mergers and acquisitions, and those firms that are subjected to a lawsuit must pay for their defense, which could involve a lengthy trial and subsequent appeals. These cases also require the time and resources of management and critical staff to address issues of firm conduct, provide financial information, and so on. We are not aware of estimates of the annual costs incurred by firms subject to antitrust investigations and court proceedings, but they probably run into the billions of dollars. Of course, the gains to consumers from actually curbing anti-competitive offenses could easily offset these costs.

The ideal way to determine whether consumers have benefited from antitrust policy and enforcement toward monopolization, collusion, and mergers is to compare consumer welfare with and without antitrust policy, all else constant.[7] Bittlingmayer (1995) found that prices did not rise the one time in U.S. history that the antitrust laws were suspended for designated industries (a byproduct of the 1933 National Industrial Recovery Act). This finding is intriguing, but dated. More recent evidence is available from limited but informative analyses of cases that compare prices before and after antitrust interventions or across industries subject to varying levels of antitrust enforcement. Candor requires us to acknowledge that this evidence, including

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[6] The *Microsoft* case is probably responsible for the increase in DOJ's budget for mergers and monopolies.

[7] Our assessment does not include price discrimination because its prohibition has rarely been enforced during the past twenty years, nor does it include resale price maintenance because its prohibition was overturned in 1997. Ippolito and Overstreet (1996) provide some evidence that resale price maintenance produced efficiency gains.

some original fragments that we provide, is fairly crude because it generally does not control for all potential influences on prices. Nonetheless, it raises serious concerns about the efficacy of antitrust policy and underscores the importance of resolving these concerns with more persuasive and comprehensive evidence.

Monopolization

As indicated in table 1, DOJ investigates fewer than ten potential monopolization violations a year and initiates only a handful of cases. To prove monopolization, the government must demonstrate that a firm has power over price and output in a market and that this power derives from business decisions whose intent was to exclude competition (Areeda (1988)). Because these cases involve different market conditions and alleged misconduct over time they are impossible to analyze *en masse*. As a result, we investigate the efficacy of antitrust policy in curbing monopolization by focusing on landmark cases over the past century including *Standard Oil, American Tobacco*, *Alcoa*, *Paramount*, and *United Shoe Machinery*.[8] These cases are of particular interest because in each of them the government prevailed and substantial relief was obtained, leading to the expectation that evidence would show that consumers benefited from these antitrust interventions.[9] To be sure, most of these cases are more than twenty-five years

[8] Standard Oil Company of New Jersey *v*. United States, 221 U.S. 1 (1911), United States *v*. American Tobacco, 221 U.S. 106 (1911), United States *v*. Aluminum Company of America, 148 F.2d 416 (2d Cir. 1945), United States *v*. Paramount Pictures, 334 U.S. 131 (1948), United States *v*. United Shoe Machinery, 110 F. supp. 295 (D.Mass. 1953), aff'd. 347 U.S. 521 (1954).

[9] Remedies in monopolization cases are either structural or behavioral. Structural remedies amount to court ordered changes in a firm's or industry's structure such as horizontal divestiture (e.g., two or more separate companies are created from the assets of the defendant) and vertical divestiture, separate companies are created at different production stages. Behavioral remedies address some aspect of the firm's behavior that the government identified as anti-competitive such as tying arrangements, collusive agreements to exclude competitors, predatory pricing, and so on. An enforcement agency must monitor prohibitions and the courts are inevitably required

old, but current antitrust law toward monopolization is based on precedents established by such cases. Moreover, the difficulties that the government and courts had in obtaining relief for consumers of products generated by yesterday's rapidly evolving industries are surely relevant for monopolization cases today.

We sketch each case and draw on the available empirical evidence to assess whether the structural remedy improved consumer welfare. Essentially, we test the government's theory of the determinants of the firm's success in achieving a monopoly position and the court's remedy to stimulate competition. If the government's theory is incorrect or the court's remedy is ineffective, consumer welfare will not be enhanced.

Standard Oil.[10] During the late 1800s and early 1900s, the Standard Oil Company refined and marketed crude oil produced in Pennsylvania, Ohio, Indiana, and several surrounding states and developed transportation and production facilities for processing crude. Complaints about its business practices took various forms. Standard Oil was alleged to have used ruthless tactics in negotiating contracts with railroads and in denying independent oil companies access to its pipelines. It was also alleged to have engaged in predatory pricing to drive rivals from the market.[11] And public authorities feared that the Standard Oil "Trust," which pooled the company's profits, was a source of market power and facilitated price-fixing.

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to resolve issues that arise between the agency and the firm. Finally, relief may involve the compulsory licensing of intellectual property that is the source of alleged monopoly power.

[10] A detailed discussion of the cases and the effects of the structural remedies can be found in Crandall (2001).

[11] McGee (1958) argues that Standard Oil did not attain its market position through predatory pricing, but that it may have used exclusionary practices with respect to its transportation facilities.

In 1911, the Supreme Court upheld a 1909 lower court decision that Standard Oil had violated Sections 1 and 2 of the Sherman Act by attempting to monopolize the country's petroleum industry and using its New Jersey Trust to restrain trade. The Court's decree required that the Trust be dissolved, resulting in 38 separate and independent companies that were prohibited from being controlled by a single entity.

The government believed that the Trust was a critical source of Standard Oil's monopoly power and thus presumably expected its dissolution in 1912 to reduce U.S. refined petroleum product prices and perhaps eliminate its monopsony power over crude oil prices. But the dissolution appears to have had a negligible effect on consumer welfare. Because of new oil discoveries, real crude oil prices were falling before Standard Oil was brought to trial and actually rose somewhat after the decree was enacted (figure 1). Kerosene and gasoline prices fluctuated after the decree was entered. When we controlled for other influences on crude oil prices during this period, however, the effect of the dissolution was statistically insignificant.[12] This evidence is consistent with Burns' (1977) conclusion that the stock market interpreted the decree as "benign." It is also consistent with the view that the decree could not reduce Standard's alleged market power given that it had already declined substantially from its heyday. That is, Standard Oil's market share of refinery capacity in the United States had fallen before the decree from 82 percent in 1899 to 64 percent in 1911 as oil producing regions in the Mid-Continent, Gulf, and Western regions developed, and well-capitalized independents such as Gulf

[12] We collected annual time series data from 1889-1917, and regressed real U.S. crude oil prices on GNP, total automobile registrations, and total electricity production, which control for influences on petroleum demand, a time trend from 1889-1900 which controls for the opening up of new western fields that increased petroleum supply, and a dissolution dummy (defined as 1 for 1912-1917; 0 otherwise). The coefficient for the dissolution dummy was 0.50 (with a t-statistic of 0.88).

Oil, Union Oil, the Texas Company, Sun Oil, Phillips, and Cities Service provided competition.[13] By 1920 Standard's share had fallen to 50 percent, but this decline was simply an extension of an earlier trend (Williamson, Andreano, Daum, and Klose (1963)).

In essence, the *Standard Oil* litigation involved allegations of monopoly abuses whose effects were being overtaken by rapidly evolving market conditions. The decree may have promoted competition had it been imposed before 1900, but by 1911 the oil industry was much more competitive and the decree was probably unnecessary.

American Tobacco. The American Tobacco Company produced little and regular cigars, plug and smoking tobacco, snuff, and cigarettes. By 1910, it accounted for at least 75 percent of U.S. sales of each product, except for its smaller share of regular cigars. Organized as a trust, it obtained its market position by acquiring firms such as Union Tobacco Company and the Continental Tobacco Company and by aggressive pricing behavior, which allegedly often resulted in prices below manufacturing costs (Tennant (1950)).

In 1908, the federal government filed and won a Sherman Act case against American Tobacco which sought to dissolve the trust entirely. After the Supreme Court found that the trial court's initial dissolution remedy was extreme, the trial court entered a decree in 1911 that divided cigarette production into three separate parts: American Tobacco kept assets that accounted for roughly 37 percent of production, P. Lorillard had 15 percent, and a new company, Liggett and Myers, was provided with assets to produce brands that accounted for 28 percent of output. Assets devoted to plug and smoking tobacco and cigars were divided similarly.

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[13] Comanor and Scherer (1995) also conclude that *Standard Oil* had little immediate effect on competition in the oil industry because new refineries had already begun to erode Standard's market position before the antitrust case was brought. In addition, the breakup of Standard into a large number of separate companies did not dilute the Rockefeller family's control over the new entities.

According to Tennant (1950), the immediate practical effect of restructuring the tobacco industry into a three-firm oligopoly was to unleash a battle for market share through advertising, not price. Real cigarette prices were essentially stable in the few years preceding and following the decree, and rose several years later in response to increases in tobacco excise taxes.[14] Absent price competition, the three-firm oligopoly was highly profitable, essentially earning the same profit rate during 1912-49 as the Trust earned during 1898-1908. The stability of the industry's profit rate and the absence of any clear decline in prices after 1911 suggests that the *American Tobacco* case did little to spur meaningful competition in this industry.

Alcoa. The production of aluminum consists of mining aluminum ore (usually bauxite), refining the ore to extract alumina, reducing alumina into aluminum ingot, and fabricating the ingot into mill products like sheet, tube, and wire. The Aluminum Company of America ("Alcoa"), formerly the Pittsburgh Reduction Company, took its name in 1907, and by 1909 was integrated backward into mining ore and forward into fabricating products.

In 1912 the Department of Justice charged Alcoa with restraining trade and monopolizing the aluminum industry. Alcoa signed a consent decree that required it to give up its interest in its Canadian subsidiary, dropped a contract with two chemical firms whose bauxite it had purchased, agreed not to participate in any collusive agreements or mergers, and agreed not to discriminate against any competing fabricator in the sale of ingot. But the decree did not reduce Alcoa's dominance of a very small market that could probably support only one supplier. By the late 1930s, Alcoa's primary production and imports constituted 90 percent of the supply of aluminum in the United States.[15]

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[14] The break-up of American Tobacco also did not affect the price paid to farmers for tobacco.

[15] Alcoa controlled Aluminium Limited of Canada, the largest source of imports into the United States at the time.

In 1937, the Department of Justice filed a Sherman Act civil suit, again charging Alcoa with monopolizing the aluminum market and restraining trade. The government appealed the District Court's "not guilty" verdict to the Supreme Court, which could not muster a quorum because many justices previously worked against Alcoa at DOJ. Legislation was enacted to allow the three senior judges of the Circuit Court of Appeals with territorial jurisdiction to serve as the ultimate appellate court. Judge Learned Hand issued a verdict in 1945 that reversed the lower court's decision, concluding that Alcoa had monopolized the market for primary aluminum and had engaged in a price squeeze from 1925 to 1932 by selling some aluminum sheet at prices that were too close to the price of primary aluminum ingot to allow independent fabricators to achieve adequate margins on their sales of aluminum sheet. Judge Hand did not rest his opinion on this violation, but identified it as a major problem to be dealt with in designing a remedy.[16]

The final decree was postponed until after World War II, during which the government had constructed plants for alumina reduction, aluminum smelting, and fabrication. After the war, virtually all of the government's aluminum properties were assigned to Reynolds Metals and Kaiser (then Permanente Metals Corportation), thus creating two viable competitors. Finally, in 1950 the District Court ruled against Alcoa's divestiture, but required that the Court retain jurisdiction of the case for five years in the event that the two new competitors did not provide sufficient competition. Three additional companies entered the primary aluminum market between 1950 and 1955, again with government assistance, and in 1956 District Judge Cashin found sufficient evidence of competition and ruled against another five-year test.

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[16] Crandall (2001) provides empirical evidence that this prohibition had no effect on real aluminum prices.

The failure of the first decree to erode Alcoa's monopoly position derived from the small and even declining market for aluminum that by the early and mid-1930s amounted to less than 150,000 tons, while the second decree required little of Alcoa because government programs dispersed production facilities to new entrants. When annual demand for aluminum grew in the 1940s and 1950s to more than 1.25 million tons, it is quite likely that more firms would have entered the market even without government assistance.[17] As with *Standard Oil*, changes in the market made the Alcoa monopolization case largely irrelevant. Accordingly, by 1955 Alcoa's market share was less than half what it was when the government filed a lawsuit in 1937, yet its output was more than four times greater.

Paramount. The motion picture industry is composed of movie studios, film distributors, and theatres. During the 1930s, some distributors owned theatre chains. The defendants in the *Paramount* case, initially brought in 1938, were five major distributors that owned theatres and three "minor" distributors, which together controlled 95 percent of total film rentals in the early 1940s (Conant (1960)). In 1946, the District Court found that the distributors had engaged in several practices that violated the Sherman Act including fixing admission prices and restricting output to competing theatres through tying arrangements and "formula deals."

The District Court's decree did not order divestiture, but prohibited agreements to maintain uniform prices and required a system of competitive bidding among theatres for each run of a feature film. The Supreme Court, however, found the bidding system unworkable and in 1948 ordered the lower court to reconsider divestiture. As a result of this decision, by the early 1950s, the five major distributors had completely divested their theatre chains.

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[17] It would have been difficult for Aloca to block entry because it could not control the supply of the two most important inputs to aluminum production, bauxite and electricity, after World War II.

The primary objective of the decree was to force distributors to compete for theatre space by offering attractive rental terms. Independent distributors would presumably have better access to theatres and new distributors might even enter. Under this scenario, admission prices would fall and the number of film distributors and annual film releases would increase. In fact, the average real price of a movie ticket rose in the two decades following *Paramount*.[18] In addition, there was little entry into motion picture distribution. Twenty years after the *Paramount* litigation, seven of the original eight defendants accounted for nearly three-fourths of all U.S. theatrical rentals (Crandall (1975)).

Two interpretations are possible. Either the defendants' actions were not raising ticket prices and restricting output, in which case the antitrust suit should not have been filed. Or the decree failed to end collusive behavior. A fundamental problem in analyzing the post-decree market is evaluating how the introduction of television affected theatrical admissions, which declined dramatically. New entrants and independents may have fared poorly under these market conditions, and after decades of agreeing on clearances and lengths of runs, the *Paramount* defendants may have been able to maintain a cartel agreement by restricting supply and reporting their weekly revenues from each theatre to the trade press.[19] Like *American Tobacco*, *Paramount* suggests that structural relief may fail to stimulate competition, and that modifications in the decree may be required amid realizations that it is not working.

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[18] The Consumer Price Index (CPI) for indoor theatres rose 36.4 percent between 1948 and 1958, while the overall CPI rose just 20.1 percent. The trend continued during 1958-67, with the CPI for indoor theatres rising 68.9 percent, while the overall CPI rose just 15.5 percent.

[19] Distributors' share of theatrical admission receipts rose from 30.4 percent in 1948 to 45.8 percent in 1967. Thus, they captured approximately two thirds of the 66 percent increase in real ticket prices during this period.

United Shoe Machinery. United Shoe Machinery (USM) manufactured a full line of machines used to produce shoes. By the 1940s, USM offered more than 300 types of machines, of which a shoe manufacturer might need as many as 100 to produce a shoe (Masten and Snyder (1993)). USM sold and leased its machines and provided repair and advisory services. In 1949, its market share of major machines was 91 percent, and its share of minor machines was 64 percent (Kaysen (1956)).

The government claimed that USM had monopolized the shoe machinery market through leases that impeded the purchase or lease of its competitors' machines. Exclusionary provisions of USM's leases included ten-year terms and a "full capacity" clause that required lessees to use each machine to the fullest extent possible (Masten and Snyder (1993)). USM would charge shoe manufacturers with violating this clause if they switched to a competitor's machine, but waived the penalties if the cancellation was caused by changes in demand, conversion to manual operations, or replacement with another USM machine.

In 1954, the Supreme Court upheld the District Court's 1953 decision that USM had illegally monopolized the shoe machinery market. The trial court declined to order the dissolution of USM, but structured a decree that prohibited USM from designing its lease and sales terms to make it substantially more advantageous to lease machines. In addition, the duration of all new leases had to be reduced to five years or less with an option to return machines after one year. Return charges or deferred payments were banned. The decree was intended to increase competition by encouraging the purchase of machines, thus creating a vibrant second-hand market, and inducing shoe manufactures to be more receptive to machines offered by USM's competitors.

The decree did succeed in establishing a secondhand market for machines and reducing USM's market share from roughly 85 percent in 1953 to 62 percent in 1963 (Parrish (1973)). On the other hand, USM's revenue gains were more than twice the sum of its four major competitors' gains, and its return on equity remained relatively constant. The heterogeneity of shoe machinery prevents a direct assessment of shoe machinery prices before and after the decree. However, if the decree succeeded in reducing machinery prices, it is highly likely that manufacturers would have incurred lower machinery expenses relative to the value of shoes produced. They did not.[20]

Apparently, the Supreme Court was not satisfied that sufficient competition had developed in the shoe-machinery market because following a review of the decree it recommended in 1969 that the lower court consider "more definitive means" to achieve competition. As a result, USM was forced to divest itself of roughly one-third of its remaining shoe-machinery operations. Unfortunately, as in *Paramount*, the government won structural relief only after the industry had entered a steep decline, in this case because of the rise in imported shoes.[21]

AT&T. The 1984 breakup of AT&T, which followed a 1974 monopolization case, has been interpreted as a positive example of antitrust enforcement. But the growth in long-distance telephone competition that followed the breakup and produced lower phone rates is attributable to just one aspect of the 1982 decree that forced AT&T to divest its Bell operating companies. The decree required the Bell companies to modify their switching facilities to provide equal

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[20] Based on data from the *Census of Manufacturers*, the ratio of the value of shoe machinery shipments to the value of shoe shipments remained at 0.012 between 1954 and 1967.

[21] It is speculated that the USM decree accelerated the demise of U.S. shoe manufacturing, but we are not aware of evidence to support this conclusion.

access to all long-distance carriers, a requirement that the Federal Communications Commission (FCC) could have promulgated on its own without the intervention of the antitrust authorities. The FCC, however, was in the early stages of trying to use its authority to block MCI from competing in ordinary long distance services when the AT&T case was brought to DOJ in 1974. Antitrust action was thus required to offset the FCC's anticompetitive policies. Indeed, market forces, instead of regulatory and antitrust authorities, could have substantially spurred the evolution of the telephone industry even up to the present (Crandall and Hausman (2000)).

This brief overview of landmark monopolization cases suggests that, given the protracted length of Section 2 antitrust litigation, federal antitrust actions are likely to lag far behind market developments and thus be less effective than markets in stimulating competition (e.g., *Standard Oil* and *Alcoa*). Alternatively, a court's decree may simply fail to benefit consumers (e.g., *American Tobacco*, *Paramount*, and *United Shoe Machinery*). To be sure, these cases represent a tiny share of monopolization cases brought by DOJ. But because the government prevailed and the court provided structural relief in each case, one would expect them to have led to demonstrable consumer gains. Extending our search to other and more recent monopolization cases analyzed by economists also fails to reveal such gains.[22]

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[22] For example, in 1972 the Justice Department brought suits charging each major television network with attempting to monopolize prime-time programming on its own network. Essentially, these curious charges, which were never fully litigated, were based on the belief that the networks were monopsonists that used this power to depress the total price of their programming. Crandall (1972) and Fisher (1985) argue that this assumption is untenable. Moreover, the decrees that were negotiated did nothing to address such power, even if it had existed, because they did not increase the number of networks. Eventually, the decrees were vacated. The government has also brought monopolization cases against IBM. The first case was settled by decree in 1956, but there is little evidence that it had favorable effects on competition in the computer industry, which was rapidly replacing tabulating machines with mainframe computers (Wilder (1975)). IBM quickly vaulted to a dominant position in mainframes, leading the DOJ to file another Section 2 case in 1969. This case was dropped in 1982, in no small part because the market had changed once again (see Fisher, McGowan, and Greenwood (1983) for a critique of the government's case). A number of cases including

Policymakers, however, continue to claim that certain firms are monopolists and should be prosecuted. For example, the Department of Transportation and some members of Congress have singled out airlines that dominate their hub airport as having monopoly power and accused some carriers of engaging in predatory behavior to protect hub markets. Indeed, the DOJ recently filed and lost a predatory pricing suit against American Airlines.[23] Morrison and Winston (2000) show that fares may be higher on hub routes than other routes because a hub carrier has market power or because low-cost Southwest Airlines mainly serves non-hub routes and significantly depresses fares in these markets. In any case, the cost to travelers from a hub "premium" is clearly offset by hub benefits including greater flight frequency and agglomeration economies in areas surrounding the airport.[24] Policymakers may not be persuaded by such arguments, but neither they nor economists have offered compelling evidence of consumer gains from antitrust policy toward monopolization.

Collusion

Antitrust authorities and economists agree that consumers are harmed when firms collude to set prices. They disagree over how collusion can be detected and whether policy can

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Safeway, *A&P*, and *Blue-Chip Stamps* were brought in an attempt to stop the replacement of small grocery stores by large national food chains, but these cases had little effect on market concentration because they could not prevent the more efficient chains from replacing the less efficient small retailers (Crandall and Elzinga (2002)). Finally, the merits of the *Microsoft* case are not yet clear, but its drawbacks are consistent with the problems of other monopolization cases that we have identified. First, it is shaping up to be a lengthy case. By the time it is resolved, the information technology market is likely to have changed substantially and Microsoft's dominant position may be eroded. Second, it is by no means clear what an effective remedy would be.

[23] This case is currently under appeal.

[24] Morrison and Winston (2000) also cast doubt on the claim that airlines are successfully engaging in predatory behavior.

be implemented to prevent it. Indeed, in Book I of the *Wealth of Nations*, Adam Smith opined that "It is impossible to prevent [meetings between people of the same trade], by any law which either can be executed or would be consistent with liberty and justice."

Despite efforts by economists to distinguish between competition and collusion and to investigate price-fixing empirically, this type of evidence has not been used in actual cases. Instead, price-fixing is often treated by the antitrust authorities and the courts as a *per se* violation, under which evidence of an agreement determines guilt. Given the various agreements that may be characterized as restraints of trade, the courts have adopted a "rule of reason" standard for many practices that might appear to be collusive in nature. Whether antitrust policy toward collusion has actually benefited consumers by lowering prices is another matter.

The Department of Justice investigates about 100 allegations of price-fixing a year and often proceeds with indictments, thus making it possible to assess the effect of DOJ's enforcement activity on consumer prices. Sproul (1993) analyzed a sample of price-fixing cases between 1973 and 1984. He argued that if the cartel serves to raise prices, then prosecution should lower them. On the other hand, if the cartel reduces costs through, for example, shared advertising and research, then prosecution could raise prices. The latter supposition appears to be a more accurate characterization of firms' joint conduct in these cases because Sproul found that prices *rose* about 7 percent, on average, 4 years after an indictment.[25] Even in the most successful cases, prices fell only 10 percent.

Retrospective assessments of a few specific cases have also failed to find much direct benefit from efforts to curb alleged instances of collusion. For example, Newmark (1988) found that an antitrust indictment of bakers in Seattle had no effect on the price of bread, and Morrison

[25] Sproul also found that prices rose, on average, even if one uses a starting point somewhat before the indictment (e.g., during the investigation).

and Winston (1996) concluded that a consent decree that prohibited airlines from announcing the ending dates of their fare promotions had no effect on fares.

One possible explanation for why these cases have not generally resulted in price declines is that DOJ may be primarily prosecuting firms that are engaging in activities that do not raise prices, but instead reduce costs or enhance distribution. For instance, MIT and Ivy League colleges established a tradition of coordinating their need-based financial aid decisions. The schools claimed that the so-called Overlap process enabled them to concentrate their scarce financial resources on needy students without affecting their total revenues. The government claimed that the schools were conspiring on financial aid policies to reduce aid and raise revenues. Carlton, Bamberger, and Epstein (1995) found that the Overlap process did not have a statistically significant effect on the average "price" paid per student but that it prevented the flow of school resources from lower to higher-income students. Hoxby (2000) corroborates this finding.

In another matter, ASCAP and BMI have negotiated license arrangements for authors, composers, and publishing companies that typically allow for unlimited use of copyrighted works for a fixed fee or a percentage of revenues. When CBS challenged the legality of these arrangements, the Supreme Court correctly recognized that this blanket license did not amount to price fixing; rather, the practice reduced the costs of transacting with thousands of customers and monitoring them to ensure that they paid for what they used (Sherman (2001)).

To be sure, there are well-known examples where firms have colluded to raise prices including recent cases involving lysine, citric acid, and vitamins. However, researchers have not shown that government prosecution of these and many alleged instances of collusion has led to significant declines in consumer prices.

Mergers

Department of Justice and Federal Trade Commission investigations of proposed mergers absorb more than half of federal antitrust resources. The Hart-Scott-Rodino Antitrust Improvement Act of 1976 requires any firm valued over $100 million to file a premerger notification with the FTC and DOJ if it plans to merge with another firm valued at more than $50 million.[26] After filing the notification, firms must wait 30 days before they can proceed with the merger. During this period, the FTC or DOJ can request additional time and information (known as a "second request") before deciding whether to approve or oppose the merger.

Mergers may harm or benefit consumers. Mergers that enable firms to acquire market power raise prices, while mergers that enable firms to realize operational and managerial efficiencies reduce costs and thereby lower prices. If antitrust investigations of mergers are benefiting consumers, then prices in an industry should fall from what they would have been when the government successfully challenges a merger in court or negotiates a consent decree because the merger would have been anti-competitive.[27] Second requests for information may also lower prices by discouraging anti-competitive mergers from moving forward. If antitrust investigations are focusing on mergers that primarily have efficiency effects, then prices should rise from what they would have been when the government successfully challenges a merger in court or negotiates a consent decree because the merger, as proposed, would have reduced firms' costs.

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[26] Other conditions may also determine whether a premerger notification form is mandatory for a given merger.

[27] Under a consent decree, firms agree to certain conditions to gain the government's approval of their proposed merger.

We extended the traditional profits-concentration regression framework to assess the effects of merger policy. Although this framework is out of fashion in industrial organization, it is reasonable to expect that it could provide some evidence of the efficacy of DOJ's and FTC's merger enforcement activity. We attempted to explain annual price-cost margins from 1984 to 1996 for the 20 manufacturing industries that are defined at the 2-digit SIC level. (Outcomes of merger cases are available only during this period and at this level of aggregation, and estimates of industry price-cost margins are available only for manufacturing industries.)[28]

Although we must use highly aggregated data, this should not compromise our parameter estimates. For example, the 2-digit SIC classification for transportation equipment is 37, while the 4-digit SIC classification for motor vehicles and car bodies is 3711.[29] If antitrust prosecution of a merger between car body firms has an impact on prices at the 4-digit level, it should also have an impact on prices—appropriately scaled to reflect the broader classification of industries—at the 2-digit level. Our counterfactual experiment is performed by estimating the impact of varying levels of enforcement toward proposed mergers across 2-digit industries on price-cost margins holding other influences constant.

Price-cost margins are assumed to be influenced by industry characteristics, court-based outcomes, and second requests for information. Following previous specifications (e.g., Salinger (1990)), the industry characteristics we included are the import-sales ratio, to control for foreign competition; the capital-sales ratio, to control for technology; and the growth of firms, to control for entry. The court-based outcomes we included are FTC's and DOJ's successful and

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[28] Outcomes of merger cases are available back to 1982. However, we will specify merger enforcement variables with two year lags (see below), thus we can analyze price-cost margins only as far back as 1984.

[29] We used the pre-1997 SIC classifications in our study.

unsuccessful merger challenges, as well as consent decrees reached by the government and the firms proposing to merge. In a given year, the vast majority of these outcomes are consent decrees. Court decisions opposing or supporting the initial merger application typically occur only every few years The construction of the variables and their data sources are summarized in the appendix.

An industry is not likely to experience the effect of antitrust merger policy immediately; thus, we estimated models that specified one-and two-year lags for the court-based outcomes and second requests. The estimation results presented in table 2 are based on two-year lags; using one-year lags and no lags had little effect on the main findings. The parameter estimates of the industry characteristics are plausible. A higher import-sales ratio and firm growth reduces an industry's price-cost margin, as does an increase in an industry's capital-sales ratio. Salinger (1990) found that the capital-sales ratio had a positive effect on price-cost margins during the 1970s, but that its effect became negative during the early 1980s.[30]

The coefficients of the court-based outcomes are of central interest and suggest that merger enforcement policy is primarily undermining mergers that enhance efficiency, rather than protecting competition. We find that a successful merger challenge by the FTC or DOJ has a statistically insignificant effect on an industry's price-cost margin. In contrast, an unsuccessful challenge (i.e., the court allows the proposed merger) is associated with a decline in price-cost margins, and the effect is statistically significant. When the government and the potential merger partners reach a consent decree, in most cases to gain the FTC's or DOJ's pre-trial approval of a

[30] We estimated models that controlled for several other potential influences on the price-cost margin including macroeconomic variables (unemployment, interest rates, GDP growth), industry and year fixed effects, industry output growth, selected commodity dummies, and a time trend, but these variables were statistically insignificant.

merger, price-cost margins subsequently increase. Finally, second requests have a statistically insignificant effect on price-cost margins.[31]

These findings suggest that during 1982-96 the antitrust authorities failed to focus their investigations on industries with the highest price-cost margins.[32] According to our data, the largest share of merger applications from 1982 to 1996 originated in those industries whose price-cost margin placed them in the highest annual quintile of all 2-digit SIC code industries.[33] But only about one quarter of the cases that DOJ and FTC brought to a verdict and one third of the applications that received a second request were in 2-digit industries in the upper quintile of price-cost margins. The antitrust authorities may have targeted industries with relatively low price-cost margins, thereby reducing the potential for court outcomes and second requests to improve consumer welfare. To the extent that they targeted much narrower antitrust markets with higher price-cost margins, the effect on 2-digit industries is still inconsistent with improved consumer welfare.

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[31] If antitrust enforcement were fully optimal and complete, all the merger enforcement variables should be statistically insignificant because the DOJ and FTC would have thwarted all anti-competitive attempts to raise price-cost margins. This was not the case. Our findings did not change when we specified court based outcomes and second requests as a percentage of the total mergers proposed in an industry in a given year. They were also not affected when we specified separate coefficients for DOJ's and FTC's interventions.

[32] Our analysis examined merger enforcement policy from 1982-96 because it included specifications with no lags and two-year lags for the merger enforcement variables.

[33] Between 1982-96, 27 percent of merger applications were from 2-digit industries whose price-cost margin was in the highest quintile, 16 percent of applications were from the lowest quintile, and 57 percent were distributed over the 3 middle quintiles. Although the mergers may have involved antitrust markets within a given 2-digit industry that had price-cost margins that were quite different from a 2-digit industry's average price-cost margin, the effect of antitrust enforcement should raise or lower the average price-cost margins across the entire set of 2-digit industries. Because we control for other systematic influences on 2-digit industry price-cost margins, our methodology should uncover the impact of merger policy, albeit with a somewhat diluted effect.

The FTC and DOJ did negotiate nearly half of the consent decrees with companies in 2-digit industries located in the upper quintile of price-cost margins. But while it appears that the FTC and DOJ were targeting more of the appropriate markets for whatever reason, we found that the decrees tended to raise price-cost margins rather than lower them. Similar to our findings for monopolization cases, the consent decrees may have been poorly conceived; that is, they allowed mergers to go forward only when the firms were saddled with conditions that compromised production efficiencies.

Although these findings are based on an empirical methodology that is improvable, they are not contradicted by the economics literature. We could not find any studies that showed that the FTC or DOJ prevented significant welfare losses by blocking or attaching conditions to a proposed merger.[34] On the other hand, there is some evidence that the Northwest-Republic and TWA-Ozark airline mergers that were opposed by DOJ, but approved by the U.S. Department of Transportation, have lowered travelers' fares (Morrison and Winston (2000)).

There are, of course, examples of mergers that have raised prices (e.g., Barton and Sherman (1984)). But economists' assessments of mergers generally conclude that they are not anti-competitive. Andrade, Mitchell, and Stafford (2001) provide an overview of mergers through the 1990s and find that efficiency improvements have led to a modest 1 percent gain in post-merger operating margins. Carlton and Perloff (1994) claim that the increase in shareholder

[34] Pittman (1990) finds that the Santa Fe/Southern Pacific rail merger, which was opposed by DOJ and blocked by the Interstate Commerce Commission, would have led to annual operating cost savings by the carriers but deadweight losses of roughly $100 million. Southern Pacific, however, had failed to become "revenue adequate" and probably could only survive with a merger. Indeed, it subsequently merged with Union Pacific, which led to disastrous service disruptions in the Southwest that cost shippers billions of dollars. In any case, many observers of the rail industry envision that the "final frontier" of the industry is for the two remaining railroads in the East and West to form two efficient transcontinental railroads (Grimm and Winston (2000)).

value from a merger in the United States, roughly 7.5 percent on average, is not typically due to the creation of market power.

DOJ and FTC merger enforcement policy is consistent with these assessments because each agency intensively investigates only a small portion of the thousands of mergers that are proposed each year. Unfortunately, their efforts to block particular mergers or affect a merger's outcome by allowing it only if certain conditions are met do not appear to have increased consumer welfare and in some instances may have decreased it.

Deterring Anti-competitive Behavior

Notwithstanding the evidence that we have reported, antitrust policy may have enhanced consumer welfare by deterring firms from monopolizing an industry or colluding to raise prices. Quantifying this possibility is difficult and we are not aware of any comprehensive attempts to do so. On the other hand, there is strong evidence that market forces have deterred firms from behaving in an anti-competitive manner.

We identified a few of the many instances where so-called monopolies have seen their market shares eroded by new competition. It has been suggested that government victories in *Standard Oil* and *American Tobacco* deterred other companies, such as U.S. Steel, from pursuing similar paths to monopoly power. However, Comanor and Scherer (1995) conclude that U.S. Steel's failure to maintain its large share of the country's steel output in the first half of the 20th century was due to its high costs. Given its relative inefficiency, U.S. Steel chose not to price aggressively, but to maintain a high "umbrella" over steel prices and slowly sacrifice market share. Stigler (1966) compared concentration in specific industries in England, which at the time did not have a public policy against concentration of control, with the same industries in the

United States and concluded that the Sherman Act has had a very modest effect in reducing U.S. concentration. Recent research documents that U.S. industry is structurally competitive. Pashigian (2000) used the Neal Task Force Report definition of an imperfectly competitive market as one with a four-firm concentration ratio above 70 percent and found that in 1992 only 46 out of 398 4-digit U.S. manufacturing industries met this threshold.

Market competition is clearly an important reason why most mergers are not anti-competitive. But the market also provides a testing ground for whether mergers will even be successful. Paulter's (2001) survey of the literature on mergers concludes that they "fail" 35 percent to 75 percent of the time, where failure is determined by survival, profitability, retention of assets, and so on. Because of internal and external market forces, mergers have much less predictable outcomes than do most other business investments.

Stigler (1964) pointed out that even when there are few firms in a market, it may be difficult for them to reach a consensus on price and market shares, and even if they do they may not be able to discourage cheating. Empirical evidence from the rail, airline, ready-to-eat cereal, and brewing industries illustrates some of the ways that markets prevent firms from successfully colluding.

Deregulation in 1980 spurred railroads to become much more competitive, but many observers believe that carriers still have market power in the transport of bulk commodities like coal and grain. During the mid-1980s, electric utilities that received coal shipments from the Powder River Basin in Wyoming were served by only two railroads. Although economic theory suggests that duopoly prices can range between perfectly competitive and monopoly profit-maximizing levels, many economists would suspect that the two carriers would be able to come to some arrangement that elevated rates above competitive levels. However, Gaskins (2001)

found that rail rates in the Powder River Basin approached long-run marginal costs, suggesting that carriers were not colluding on prices.

Since deregulation, rail rates for coal shipments and other commodities have been determined primarily by long-run contracts. In this environment, shippers are able to play one railroad off against another to reduce their rates (Grimm and Winston (2000)). If a railroad does not compete fiercely for a shipper's traffic, it may have to wait several years before it has an opportunity to recapture any traffic that it loses.

In April 1992, Robert L. Crandall attempted to introduce some discipline in airline pricing by urging other carriers to adopt American's pricing regimen of four basic fares and reduced full-fare coach and first-class fares. Morrison and Winston (1995) conducted causality tests to determine the extent of price leadership in the airline industry and found that American's influence was too limited to get other carriers to follow its lead. That is, carriers were far less willing to adopt American's pricing strategy in markets where they did not compete with American. By October 1992, Crandall abandoned the strategy, bemoaning "We tried to provide some price leadership but it didn't work, so we are back into the death by a thousand cuts."[35]

In contrast to railroads and airlines, the ready-to-eat cereal and brewing industries are characterized by persistently high price-cost margins. Economists have explored whether market power in these industries is attributable to collusive pricing behavior, but rejected this explanation. Cereal firms (Nevo (2001)) and brewers (Baker and Bresnahan (1985)) have engaged in non-price competition, in particular advertising, to influence the perceived quality of their products and elevate price-cost margins. Indeed, firms that produce differentiated products

[35] Coleman Lollar, "Back to the Bad Old Days," *Frequent Flyer*, December 1992.

face less incentive to engage in and find it more difficult to maintain collusive agreements than firms that produce homogeneous products.

There is widespread belief that the antitrust laws deter collusion more than they deter attempts to monopolize. Firms convicted of price-fixing are subject to federal penalties and also vulnerable to private suits for treble damages. Block, Nold, and Sidak (1981) provide evidence that such class actions are the strongest deterrence against collusion. Apparently, some firms have not been deterred from colluding because DOJ continues to bring price-fixing cases. Recently, the Antitrust Division has attempted to strengthen deterrence by imposing higher fines on corporations for price fixing and expanding the use of corporate leniency for firms that disclose their role in a conspiracy and cooperate with the government. However, Kobayashi (2002) suggests that these actions may be excessive and lead to overdeterrence, which would induce excessive investments in monitoring and prevention, raise production costs, and result in higher consumer prices.

The lack of studies that assess the deterrence effects of the antitrust laws does not imply that these effects do not exist. We suspect they do, but question whether they significantly improve on the market's ability to deter anti-competitive behavior.

Where Do We Stand?

Economists have repeatedly found that the U.S. economy has experienced only a small deadweight loss from non-competitive pricing. Harberger's (1954) initial finding of a deadweight loss of roughly 0.1 percent of GDP has been revisited by several authors. More recent estimates summarized by Ferguson (1988) indicate a deadweight loss of about 1 percent

of GDP, but do not account for any possible dynamic benefits of imperfect competition such as greater investments in R&D that lead to enhanced product quality and design.[36]

These estimates suggest that although there may be firms that collude or have unfairly monopolized a market, the extent of this activity is quite limited. We have explored whether antitrust policy or the inherent forces of competition are largely responsible for this state of affairs. There is ample evidence that the market is an effective force for spurring competition and curbing anti-competitive abuses. The available evidence regarding the effects of antitrust policy is based on suggestive analyses of a small fraction of the universe of cases and thus is neither extensive or persuasive enough to enable us to draw strong conclusions. This evidence, however, does raise valid concerns about the effectiveness of antitrust policy that stem from the excessive duration of Section 2 cases, the difficulties in formulating effective remedies, and the possible failure to investigate and prosecute price fixing and mergers only in those markets where consumer welfare will be compromised. In a new economy characterized by dynamic competition and rapid technological change, the challenges of formulating and implementing effective antitrust policies are likely to grow.

And, of course, antitrust policy is influenced by political forces, as are all public policies. Weingast and Moran (1983) and Coate, Higgins, and McChesney (1995) document political influences on FTC decisions and merger challenges. It is also likely that firms try to exploit the antitrust process to gain a competitive advantage against their rivals.

We recognize that antitrust doctrines have changed and continue to change over time (Baker (2002)). Our concern is that these changes have not been guided by empirical assessments that identify which policies have and have not succeeded in raising consumer

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[36] Cowling and Mueller (1978) found a much larger deadweight loss than other researchers because they included advertising expenditures as part of welfare losses.

welfare. These concerns are intensified because firms must expend substantial resources to defend themselves against antitrust investigations and prosecutions.

The track record that we have begun to compile on the empirical effects of antitrust policy suggests that more informed guidance on how current statutes and the institutions that administer them should be reformed may offer large social benefits. The extent and nature of these reforms await future research.

Appendix

This appendix summarizes the construction of the variables used in the price-cost margin regression and their data sources. Data were obtained for the price cost margin, import-sales ratio, and capital-sales ratio from 1984 to 1996, and for company growth, court-based outcomes, and second requests from 1982 to1996 to accommodate two-year lags.

Price-cost margin: The variable is constructed following standard practice as (value added + inventories – payroll) / (value of shipments + inventories). Data for each of the components were obtained from the *Annual Survey of Manufacturers*, published by the Bureau of the Census.

Import-sales ratio: Total imports were obtained from Robert Feenstra, who assembled data from the U.S. Department of Commerce and the *U.S. Industry and Trade Outlook*. Sales data, reported as shipments, were from the *Annual Survey of Manufacturers*.

Company growth: Data were obtained from the *Economic Census*, published every five years by the Bureau of the Census and from the annual *County Business Patterns* (CBP) also published by the Census. The *Economic Census* contains company data, while the CBP contains plant data. Thus the ratio of plants to companies in the "benchmark" years of 1977, 1982, 1987, and 1992 was used to generate an estimate for company growth on an annual basis.

Capital-sales ratio: Capital, which is measured as the historical cost of the net stock of fixed private capital, is from *Fixed Reproducible Tangible Wealth*, published by the Bureau of Economic Analysis within the Department of Commerce. For sales, see above.

Court-based outcomes and second requests: Data on mergers successfully challenged in court, mergers unsuccessfully challenged in court, consent decrees, and second requests are from the Hart-Scott-Rodino Annual Reports, which are annual reports to Congress prepared jointly by the FTC and the Antitrust Division of the DOJ. Court outcomes were described in each report, and the SIC codes for the companies involved in the cases were determined by consulting FTC and DOJ case histories.

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Table 1. DOJ Antitrust Division and FTC Investigations and Budgets, 1981-2000

All figures in millions of 2000 inflation-adjusted dollars

Investigations

Agency	Conduct	1981	1991	2000
Antitrust Division	Monopolies	8	5	8
	Mergers	66	92	177
	Price Fixing	145	77	82
FTC	Mergers	104	136	189
TOTAL		323	310	456

Budgets

Agency	Conduct	1981	1991	2000
Antitrust Division*	Monopolies and Mergers	$31.1	$23.3	$57.2
	Price Fixing	$22.2	$24.6	$30.7
FTC**	Mergers	$54.4	$45.5	$59.0
TOTAL		$107.7	$93.4	$146.9

Sources:
US Budget, 1982, 1992, 2002; Department of Justice Budget, FY 1981, 1991, 2000; Antitrust Division Workload Statistics 1981-1990, 1991-2000; 5th, 14th, and 23rd Annual Hart-Scott Rodino Report (FY 1981, 1991, and 2000).

* Antitrust Division budgetary information does not distinguish between expenditures on monopoly and merger cases.

**Although its primary anti-competitive responsibility concerns mergers, the FTC also occasionally brings cases related to tying arrangements, price discrimination, and unfair methods of competition under provisions of the Clayton Act and the Federal Trade Commission Act.

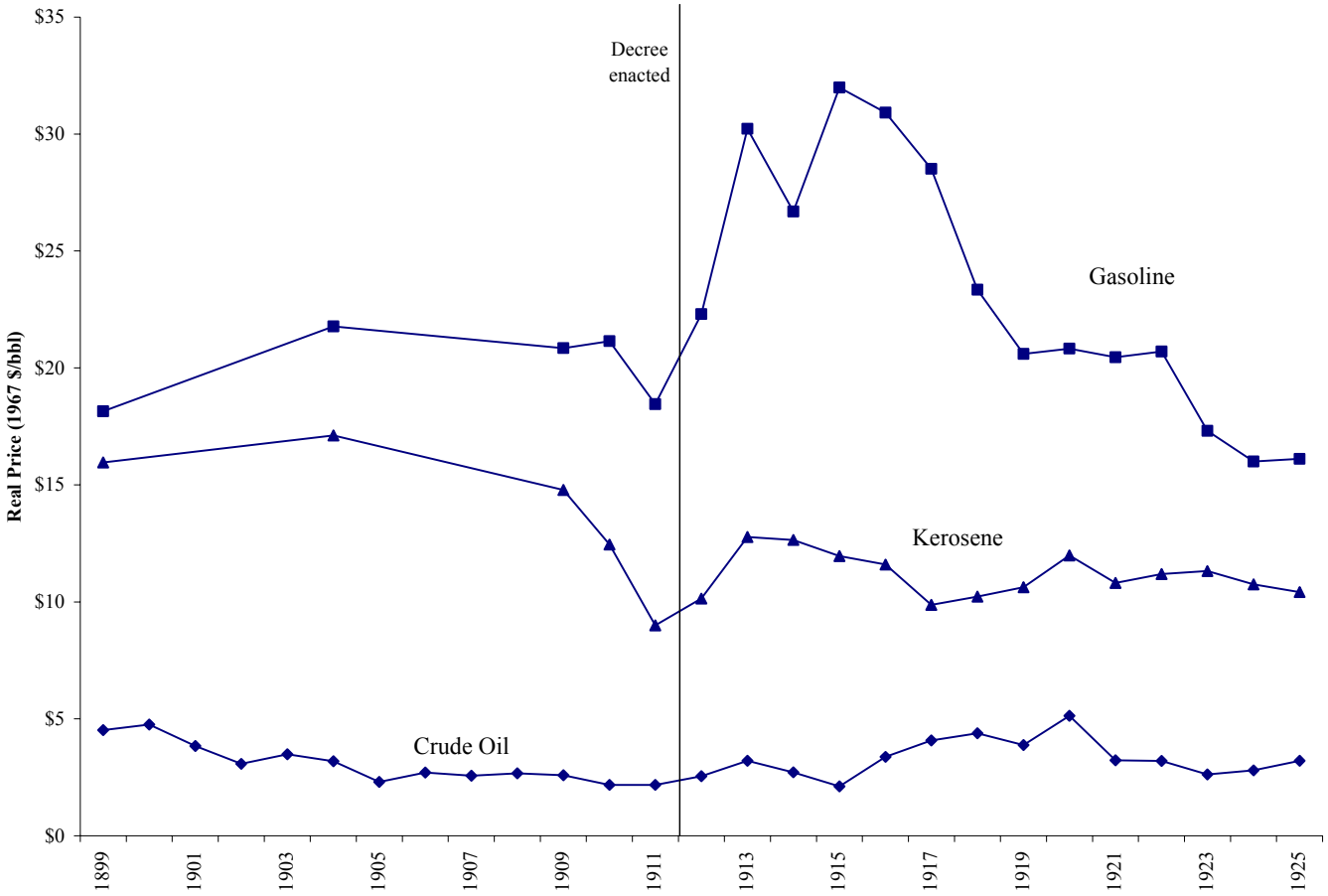
Table 2. Price-Cost Margin Parameter Estimates*

Variable	Coefficient**
Constant	0.518 (0.018)
Industry Characteristics	
Import-sales ratio	-0.071 (0.020)
Log of companies' growth (2-year lag)	-0.721 (0.188)
Capital-sales ratio	-0.105 (0.008)
Court-Based Outcomes	
Mergers successfully blocked by FTC or DOJ (2-year lag)	-0.040 (0.032)
Mergers unsuccessfully challenged by FTC or DOJ (2-year lag)	-0.038 (0.011)
Consent decrees (2-year lag)	0.017 (0.004)
Other Outcomes	
Second request for information made by FTC or DOJ (2-year lag)	-0.001 (0.002)
R^2	0.45
Number of observations	260

* The construction of the variables and their data sources are in the appendix.
** Robust standard errors are in parentheses.

Figure 1

Real Petroleum Product Prices, 1899-1925



Note: Gasoline and kerosene prices are deflated by the Consumer Price Index for all urban consumers. Crude oil prices are deflated by the GNP deflator.
Sources: Williamson, et al. (1963); U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition* 224, 593-594 (U.S. Department of Commerce, 1975); Bureau of Labor Statistics internet